


# Population Ageing from the Perspective of Labour-Force Participation: The Case of Croatia and Serbia

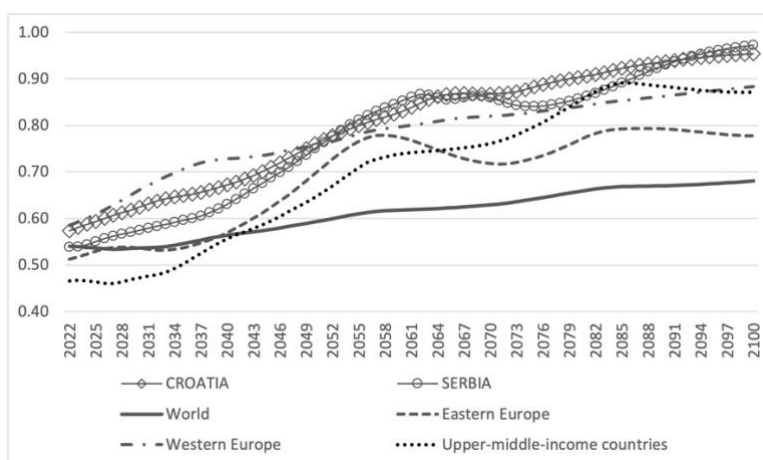
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## Topic

Population ageing, as defined by conventional demographic indicators, causes a great concern to an increasing number of countries worldwide, as a larger share of the elderly leads to an increase in public expenditures, especially in terms of health care and pensions, calling into question sustainability of social programs. Therefore, it is not surprising that the forecast of an almost doubling of the share of people older than 65 in just four decades in many parts of Europe, has prompted the suggestion of policies that stimulate either an increase in immigration, or the birth rate in order to forestall the negative economic consequences of this demographic process. However, the assumption that everyone older than 65 represents an economic burden for society, completely ignores the trend of increasing life expectancy, better health and educational level of the population that characterizes the developed part of humanity in recent decades. This also ignores the increase in labour force participation rates that resulted from these civilizational advances. Finally, it is highly questionable that the effect of pro-immigration or pro-natal policies on the size of the labour force can be stronger than the effect of changes in activity and productivity rates in populations that can significantly increase them (Lutz & Gailey, 2022; Marois et al., 2020).

Croatia and Serbia, neighbours and former parts of the same country, have for many years now been among the countries characterized by the highest aging dependency ratios in the world due to a comparatively long period of below replacement fertility and high emigration of the younger population (Nikitović, 2022b). Both countries lack an attraction for long-term immigration from third countries due to similar challenges related to slow advances in economy and overall well-being of population unlike the most western societies and some new EU member states that also face low birth rates in this century. It seems that shrinking and ageing of their population will continue as no major shift is expected in migration trends in decades to come according to the forecasts of renown statistical offices including those of the United Nations and Eurostat (Fig. 1).



**Fig. 1** Total dependency ratio – TDR (0-14&65+/15-64) for the 2022-2100 period according to the medium scenario of the United Nations' WPP2022 projection for Croatia and Serbia and selected world regions

*Note:* authors' calculations based on data from the United Nations (2022)

Given such a demographic perspective, we wanted to explore what impact of change in economic activity of population might be on the ageing indicators of Croatia and Serbia, particularly that both countries have comparatively low participation rates in European context. This is considered by means of different scenarios of labour-force participation rates in the next 40-year period.

## Theoretical focus, data and methods

When we measure population ageing by conventional demographic indicators such as age dependency ratios, which express relations between large age groups (0-14, 15-64, 65+), we only measure the demographic framework of the process. Yet, two populations having same dependency ratios need not to be equally affected by the ageing. The reason is that the actual age patterns of activity do not match the implicit assumptions of these indicators about a fixed age limit between the active and inactive population and perfect participation of those younger than that limit in the labour force.

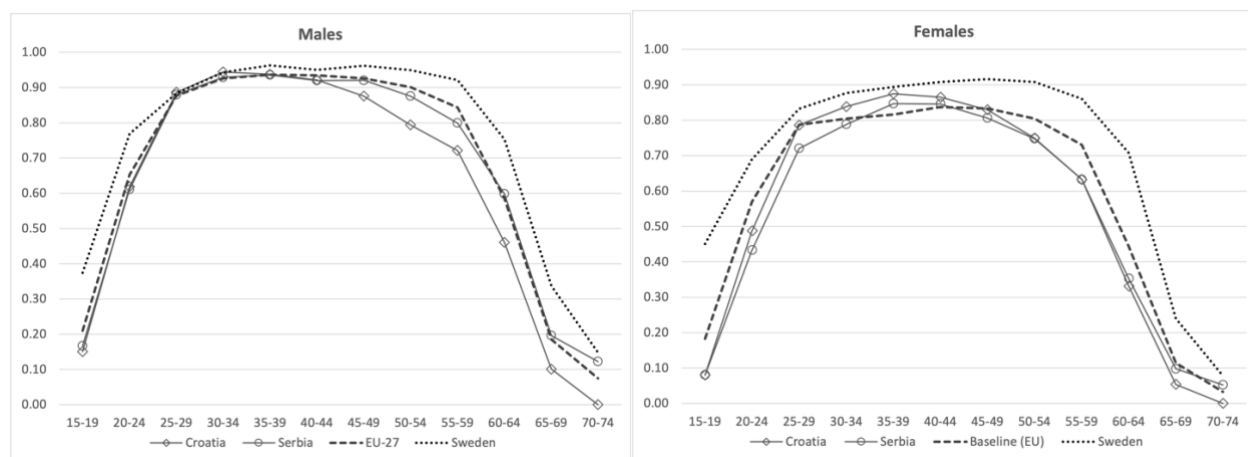
Introducing the concept of prospective (biometric) versus usual retrospective (chronological) age in demographic analyses showed that, in terms of life expectancy, the forties are the new thirties, and the seventies are the new sixties (Sanderson & Scherbov, 2005). Although the application of this concept on the example of Serbia proved that the sex-age structure of the population is still a key determinant of its economic burden (Devedžić & Stojilković, 2012), recent trends in labour force participation suggest that the change in this factor could be crucial for the size of the future labour force (Eurostat, 2023). Since a more educated population participates in a higher percentage and remains active in the labour market longer, and that future cohorts will most likely be more educated than today's, it is to be expected that older workers in the coming decades will be more economically active than they are today. Therefore, instead of the rough assumption that the productive life of all people ends at the age of 65, i.e. that everyone younger than that deep-rooted limit participates in the labour market at the same rates as implied by TDR, we considered the labour force dependency ratio (LFDR), which takes into account the actual participation in the labour force. This indicator shows the ratio between all economically inactive and all economically active people, regardless of their age. In this way, the fact that a significant share of the population between the ages of 15 and 64 is not in the labour force (students, housewives, early retirement) is taken into account, and that part of the population over 65 is still active. Also, apart from the economic justification, measurement with this indicator sends the message that the activity is very desirable even in older age in accordance with the recognized positive impact in the form of well-being and connection with the community. Thus, most of the fear of an increase in the economic burden of an ageing population, expressed through the age dependency ratios, may not materialize at all as suggested by some recent research (Kupiszewski et al., 2012; Lutz & Gailey, 2022; Marois et al., 2020).

The *medium scenario*, which represents the most probable future from the United Nations' WPP2022 set of population projections, was taken as the basis for calculating the future population of Croatia and Serbia by sex, age, and activity.

We considered three scenarios of future activity rates by sex and age. The projection horizon is limited to the 2022-2060 period as net emigration is not expected to turn into net immigration in Croatia and Serbia in the next four decades, according to the most likely scenarios of world agencies, including Eurostat projections for most EU members from Eastern Europe. The goal is to assess the impact of changes in activity patterns on the economic pressure of inactive people in the circumstances of a permanent net emigration. Also, it might be the longest reasonable period for hypothesizing about future activity rates (Kupiszewski et al., 2012).

Activity rates for the population aged 15-74 by sex and five-year age groups, obtained from the 2022 Labour Force Survey (LFS), were taken as initial values in all three scenarios (Eurostat, 2023).

Considering the relatively low current activity rates of both analysed populations (Fig. 2), especially among some younger and older age groups, we assumed that reaching the current age pattern of activity for the EU-27 average is a realistically achievable goal by 2060 in the *baseline scenario*. Such improvements would mean a reduction in the burden of dependent population compared to the current situation, contrary to prevailing expectations that an ageing population will put increasing pressure on the economy over time.



**Fig. 2** Activity rates by 5-year age groups for Croatia, Serbia, the EU-27 average and Sweden according to the 2022 Labour force survey

Note: authors' calculations based on available datasets from Eurostat (2023)

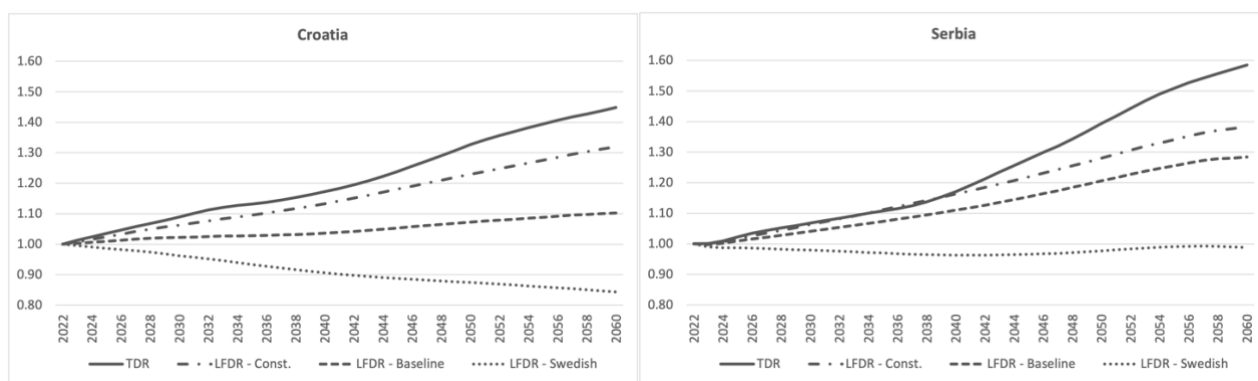
Another two scenarios of future labour force patterns are intended as borderline cases in terms of their probability. The *constant scenario* assumes the "freezing" of current rates implying stagnation or deterioration of socioeconomic conditions in both countries. Although it is unlikely that the rates can remain constant over four decades, the comparison of the *baseline* with the *constant scenario* shows how much the pressure of population ageing can be reduced by socioeconomic progress, i.e. independent of the direct impact of demographic factors. Even more pronounced development of Croatia and Serbia, embodied in the *Swedish scenario*, assumes that the

current activity pattern of the Swedish population – a country where participation rates are among the highest in Europe, will be reached by 2060. Such a future seems unlikely from the current perspective, but it clearly shows how much the pace of change in non-demographic factors can contribute to reducing the effects of population ageing compared to the other two scenarios, and that boosting participation rates could be a powerful strategy to avoid ageing-induced economic decline.

Finally, it should be borne in mind that, although the Labour Force Survey, the results of which were used as input data in the presented projections, starts from a very broad definition of workers, it still does not include the jobs that many women perform as mothers, guardians and caregivers, and which are of great value to society (Lutz & Gailey, 2022). This indicates that the predicted increases in activity, primarily among the female population, are already grounded in reality.

## Preliminary results

Fig. 3 presents the future trajectories of the total dependency ratio (TDR) and three scenarios of the labour force dependency ratio (LFDR), all based on the *medium scenario* of the UN WPP2022 population projections in the period 2022-2060. All indicators are standardized to 1.0 in 2022 for easier comparison of trends over time.



**Fig. 3** Total dependency ratio – TDR and Labour force dependency ratio – LFDR (baseline, constant and Swedish scenario) as predictors of the economic burden due to population ageing in Croatia and Serbia, 2022-2060

Note: authors' calculations based on: United Nations (2022); Eurostat (2023)

The traditional total dependency ratio (TDR) shows the most dramatic increase of 45% and 60% by 2060 for Croatia and Serbia, respectively. This increase will even accelerate after 2040 as the generations representing the echo of baby-boomers enter the old age. On the other hand, the increase in LFDR would be 66-71% the increase in TDR after four decades of projection even just assuming constant activity rates. According to the most likely future (the *baseline scenario*), the increase in LFDR would be a half the increase in TDR in Serbia, and only a quarter in Croatia until 2060. Such a trajectory can be attributed to the assumed increase in participation among younger people, older workers (females in both countries and males in Croatia) as a reflection of the growing share of the more educated and of the social progress in general.

Similar findings emerge from the projections for the EU when comparing the future trajectories of TDR and LFDR, although those indicators are not based on the same population projections as in this paper. The increase in TDR for the EU-27 would reach as much as 62% by 2060, which almost matches our forecasts, while in some EU countries TDR would double if compared to the current level. The future LFDR at the EU-27 level also shows a far smaller increase (just 20%) in the economic burden of inactive people over the same period, contrary to the popular narrative of impending economic doom (Marois et al., 2020).

According to the *Swedish scenario*, which from the current perspective seems difficult to achieve for many countries, and especially for the two we analysed, there would even be a reduction in the burden of dependent people. An additional increase in the participation of females and older male workers in the labour market compared to the *baseline scenario* (Fig. 2), as well as a shift in the retirement age to current levels in Sweden, would constantly keep the economic burden lower than the current by about 5% in Serbia. In Croatia, the burden would be lower than today by even 16% up to 2060. Clearly, it would be desirable for the pace of change to be faster, as assumed by the *Swedish scenario* of higher target activity rates. Only such a future enables a certain reduction of the LFDR and that in a relatively short period.

Introducing a productivity dimension linked to different levels of education in the LFDR, as suggested by Marois et al. (2020), would likely bring additional reductions in the projected economic burden.

## Instead of a conclusion

We assessed the impact of changes in labour force participation on the dependency burden under conditions of continuous net emigration predicted by the United Nations' WPP2022 most likely scenario of the components of population change. Such a standpoint is based on the expected increase in the educational attainment and consequently the economic activity of the population, and the fact that conventional indicators of population ageing do not reflect the real pressure of non-workers to workers. This turned out to be particularly justified considering the low participation rates, above all among younger and older groups of women in both analysed countries and men older than 45 in Croatia. Due to expected shrinking of the working-age population, the increase in the dependency burden would be smaller even by the *scenario of constant activity rates* than the increase in the conventional TDR by 2060. A particularly important conclusion is that, with even a very slight increase in participation rates, as predicted by the *baseline scenario* of activity, there would be only minimal increase in the pressure of inactive people in the next two decades, and in Croatia even by the end of the projection. According to the scenario of gradually reaching the current activity rates of the Swedish population, the dependency burden would be lower than today during the whole projection period in both countries.

Although reducing emigration and gradually moving towards net immigration in Croatia and Serbia should be an important part of their governments' strategies to approach a more favourable demographic future, the increase in activity is most probably the fastest and most effective strategy not only for slowing down, but also for reducing the pressure of non-workers to workers in conditions of a shrinking total population. This confirmed the findings of an earlier study for Serbia (Kupiszewski et al., 2012), as one of the first countries in the region to face a shrinking and ageing population.

## Limitations and further improvements

Estimates of the initial populations of Croatia and Serbia for 2021 in the WPP2022 projection were based on the 2011 census. Yet, recent censuses conducted in Croatia (2021) and Serbia (2022) show that their population size in 2021 was smaller by 4.6% and 6.3%, respectively than the WPP2022 estimated. If we put aside the unexpected but not crucial impact of Covid-19, the main reason for these overestimations of the total population decline by WPP2022 is the underestimation of emigration in regular statistics during the intercensal period (Nikitović, 2022a). This means that the indicators of population ageing presented in this paper would be even more unfavourable due to the selectivity of migration according to age. In other words, the underestimation of emigration would primarily be reflected in the overestimation of the working-age population. In order to take a more precise look at population ageing and its effects on the economic burden of societies in Croatia and Serbia, it would be necessary to update the analysed indicators (by producing the updated population projections) for the final version of this paper, and to explicitly account for productivity of population as suggested by Marois et al. (2020) on the basis of more detailed datasets from LFS.

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